SAFETY DATA SHEET
According to Regulation (EC) No 1907/2006 of 18 December 2006 (REACH)

ESFENVALERATE 2.5 EC

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product label names

SUMI-ALPHA
Esfenvalerate, 2.5% emulsifiable concentrate
GIFAP Code: EC

Use
Insecticide (agricultural use)

Supplier
Interfarm (UK) Ltd
36, Newgate Street, Doddington, Cambs PE15 0SR. UK.
Tel + (0)1354 741414

2. HAZARD IDENTIFICATION

Chemical description

Esfenvalerate 2.5% emulsifiable concentrate
GIFAP Code: EC

Classified as hazardous according to EU directives 1999/45/EC, 2001/60/EC and 2006/8/EC:
Classification based on Tests

Symbol(s)
HARMFUL (Xn) DANGEROUS FOR THE ENVIRONMENT (N)

R(isk) phrase(s)
R10: Flammable
R20/22: Harmful by inhalation and if swallowed
R41: Risk of serious damage to eyes
R43: May cause sensitisation by skin contact
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S(afety) phrase(s)
S16: Keep away from sources of ignition - No smoking.
S23: Do not breathe spray.
S24/25: Avoid contact with skin and eyes
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection
S38: In case of insufficient ventilation, wear suitable respiratory equipment
S60: This material and its container must be disposed of as hazardous waste
S61: Avoid release to the environment. Refer to special instructions/Safety data sheets.

Special risks and safety precautions (directive 91/414/EEC):
General provisions
SP 1: Do not contaminate water with the product or its container (Do not clean application equipment near surface water).

Specific safety precautions
SPo 2: Wash all protective clothing after use.
SPe 3: To protect aquatic organisms respect an unsprayed buffer zone of 5 m to surface water bodies.

Other hazards:
May cause a transient itching and/or burning sensation in exposed human skin (paresthesia).

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is to be considered as a preparation in conformance to EC directives.
Information on ingredients:

Chemical description
Esfenvalerate, 2.5% emulsifiable concentrate

Composition/Information on hazardous ingredients

<table>
<thead>
<tr>
<th>Number</th>
<th>% w/v</th>
<th>CAS number</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.5</td>
<td>66230-04-4</td>
<td>(S)-alpha-Cyano-3-phenoxymethyl (S)-2-(4-chlorophenyl)-3-methylbutyrate</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>1330-20-7</td>
<td>Emulsifier</td>
</tr>
<tr>
<td>3</td>
<td>Balance</td>
<td>601-022-00-9</td>
<td>Xylene</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>EC number</th>
<th>Annex-1 number</th>
<th>Symbol(s)</th>
<th>Risk phrase(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>650-033-00-5</td>
<td>N, T</td>
<td>R23/25, R43, R50/53</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(*)</td>
<td>Xi</td>
<td>R10, R41</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>215-535-7</td>
<td>Xn</td>
<td>R10, R20/21, R38</td>
<td></td>
</tr>
</tbody>
</table>

Other information
(*) All components are registered in EINECS/ELINCS
SCAE code: R707
4. FIRST AID MEASURES

Symptoms and effects
May cause a transient itching and/or burning sensation in exposed human skin. Synthetic pyrethroids can produce paresthesia. Typically, symptoms begin several hours after cutaneous exposure, peaks within 12 hours and resolves within about 24 hours. Harmful by inhalation and if swallowed. Risk of serious damage to eyes. May cause sensitisation by skin contact.

First aid
General
In all cases of doubt, or when symptoms persist, seek medical attention.
Inhalation
Move to fresh air. If symptoms persist, seek medical advice.
Skin
Remove contaminated clothing. Wash immediately with soap and water.
Eye
Rinse immediately and as long as possible with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Always seek medical advice.
Ingestion
Rinse mouth. Never induce vomiting in unconscious or confused persons. Seek medical advice.

Advice to physician
Symptomatic treatment is advised.

5. FIRE-FIGHTING MEASURES

Extinguishing media
Dry chemical powder, carbon dioxide, sand, foam.

Unsuitable extinguishing media
Water with full waterjet

Special exposure hazards
none known

Hazardous decomposition/combustion products
May emit toxic and irritating fumes under fire conditions.

Protective equipment
Wear self-contained breathing apparatus. Wear suitable protective clothing and eye/face protection. See also section 8.

Other information
Water used to extinguish a fire should not be allowed to enter the drainage system or water courses.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Do not breathe spray. Avoid contact with skin and eyes. For personal protection see section 8.

Environmental precautions
Do not allow to escape into sewage system or water courses.

Methods for cleaning up
In case of spill (liquid), soak it up immediately with suitable absorbent such as sawdust or granular absorbent clay. Sweep up and dispose as waste following local regulations. Do not wash residues into drains or other waterways.

7. HANDLING AND STORAGE

Handling
The usual precautions for handling chemicals should be observed. For personal protection see section 8.

Fire and explosion prevention
Keep away from sources of ignition – No smoking. Prevent electrostatic discharges. Above the flash point an explosive mixture can be formed.

Storage requirements
Store in a dry and cool place. Keep container in a well-ventilated place. Keep away from heat. Keep container tightly closed.

Other information
Do not mix with water (except for the normal preparation).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls
Provide adequate ventilation.

Exposure limits
No exposure limits have been established for this material. The following exposure limit(s) apply for:

<table>
<thead>
<tr>
<th>Substance</th>
<th>OES-TWA</th>
<th>OES-STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>441.000</td>
<td>662.000</td>
</tr>
</tbody>
</table>

Personal protection

Respiratory
The usual precautions for handling chemicals should be observed.

Hand
Wear protective gloves.

Eye
Wear safety goggles or face shield.

Skin and body
Wear suitable protective clothing.

Other information
Launder clothes before reuse.
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According to Regulation (EC) No 1907/2006 of 18 December 2006 (REACH)
ESFENVALERATE 2.5 EC

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>clear liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>pale yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>faint characteristic</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>not determined</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>27 °C (Tagliabue closed cup)</td>
</tr>
<tr>
<td>Flammability</td>
<td>flammable</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>500 °C (xylene)</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>vapours may form explosive mixtures with air</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>1.1 – 6.1 vol % (xylene)</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>not determined</td>
</tr>
<tr>
<td>Density</td>
<td>0.894 g/ml (20°C)</td>
</tr>
<tr>
<td>Bulk density</td>
<td>not applicable</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>emulsifiable in water (solubility of Esfenvalerate: &lt; 0.001 mg/l, 20°C)</td>
</tr>
<tr>
<td>pH value</td>
<td>5.2 (1% in water)</td>
</tr>
<tr>
<td>Partition coefficient n-octanol/water</td>
<td>not determined (Esfenvalerate: log Pow = 6.24, 25°C)</td>
</tr>
<tr>
<td>Relative vapour density (air = 1)</td>
<td>not determined</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1.2 mPa.s (20°C)</td>
</tr>
<tr>
<td>Surface tension</td>
<td>40.9 mN/m (20°C)</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>Stable under recommended storage and handling conditions (see section 7).</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Avoid high temperature. Keep away from sources of ignition – No smoking.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Alkaline materials.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>May emit toxic and irritating fumes under fire conditions (see also section 5).</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Esfenvalerate 2.5% emulsifiable concentrate</td>
</tr>
<tr>
<td>Acute toxicity</td>
<td></td>
</tr>
<tr>
<td>Oral LD50</td>
<td>rat: 436 mg/kg</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>rat: &gt;2000 mg/kg</td>
</tr>
<tr>
<td>Inhalation</td>
<td>rat (4 hours, whole body): 4.8 mg/l</td>
</tr>
<tr>
<td>Skin</td>
<td>moderately irritating (but not classified according to EU Directive 2001/59/EC)</td>
</tr>
<tr>
<td>Eye</td>
<td>severely irritating</td>
</tr>
<tr>
<td>Sensitisation</td>
<td>sensitising (maximisation test)</td>
</tr>
<tr>
<td>Other toxicological information</td>
<td>Active substance (Esfenvalerate technical grade) :</td>
</tr>
<tr>
<td></td>
<td>- genotoxicity: negative in all tests</td>
</tr>
<tr>
<td></td>
<td>- teratogenicity, toxicity for reproduction: negative</td>
</tr>
<tr>
<td></td>
<td>- oncogenicity: negative</td>
</tr>
<tr>
<td></td>
<td>- temporary signs of neurotoxicity in rats (90-d study) at dose levels &gt; 3 mg/kg/day.</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Esfenvalerate, 5% emulsifiable concentrate</td>
</tr>
<tr>
<td>Ecotoxicity</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>Acute toxicity, 96h-LC50 (Oncorhynchus mykiss) : 4.5 µg/l</td>
</tr>
<tr>
<td></td>
<td>21 days-LC50 (Oncorhynchus mykiss) : 0.36 µg/l</td>
</tr>
<tr>
<td></td>
<td>(No Observed Effect Concentration (NOEC) : 0.18 µg/l)</td>
</tr>
<tr>
<td>Daphnia</td>
<td>Acute toxicity, 48h-EC50 (Daphnia magna) : 3.4 µg/l (static)</td>
</tr>
<tr>
<td></td>
<td>Reproduction test, 21d-EC50 (Daphnia magna) : 0.41 µg/l (static)</td>
</tr>
<tr>
<td></td>
<td>(No Observed Effect Concentration (NOEC) : 0.056 µg/l)</td>
</tr>
<tr>
<td>Algae</td>
<td>Acute toxicity (Scenedesmus subspicatus) :</td>
</tr>
<tr>
<td></td>
<td>96h -EC50 (biomass) : 0.135 mg/l ; 24-48h EC50 (growth rate): 0.215 mg/l</td>
</tr>
<tr>
<td></td>
<td>(No Observed Effect Concentration (NOEC) : 0.05 mg/l)</td>
</tr>
<tr>
<td>Bees</td>
<td>Acute toxicity, 48h-oral LD50 (Apis mellifera) : 0.21 µg a.s./bee</td>
</tr>
<tr>
<td></td>
<td>Acute toxicity, 48h-contact LD50 (Apis mellifera) : 0.07 µg a.s./bee</td>
</tr>
<tr>
<td></td>
<td>Not expected to present a significant risk to honey bees under field conditions.</td>
</tr>
<tr>
<td>Earthworm</td>
<td>Acute toxicity, 14d-LC50: 212.5 mg/kg soil (i.e.10.6 mg a.s./kg soil)</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
According to Regulation (EC) No 1907/2006 of 18 December 2006 (REACH)

ESFENVALERATE 2.5 EC

Name
Esfenvalerate, technical grade

Ecotoxicity
Birds
Acute toxicity, LD50 (Mallard duck): > 2250 mg/kg b.w.
Acute toxicity, LD50 (Bobwhite quail): 1312 mg/kg b.w.

Fate
Degradation Abiotic
pH5: DT50 = 129 days at 25°C
pH7: DT50 = limited hydrolysis
pH9: DT50 = 65 days at 25°C

Degradation Biotic
Not readily biodegradable

Bioaccumulation
Partition coefficient n-octanol/water log Pow : 6.24 (25°C)
Bio Concentration Factor (BCF), exposure 28 days (Cyprinus carpio): 2850 – 3650
(depuration time: CT50 = approx. 7 - 8 days)

13. DISPOSAL CONSIDERATIONS

Product
According to local regulations. For further advice contact manufacturer.

Contaminated packaging
According to local regulations.

14. TRANSPORT INFORMATION

Land transport ADR/RID
ADR/RID class 3
Label(s) 3
Hazard Identification no. 33
Proper shipping name FLAMMABLE LIQUID, N.O.S. (contains: approx. 85% xylene)

UN number 1993

Class 3
Packing group II

Marine pollutant yes
EMS F-E, S-E

Proper shipping name FLAMMABLE LIQUID, N.O.S. (contains: approx. 85% xylene)

UN number 1993

Class 3
Packing group II

Air transport ICAO-TI/IATA-DGR

UN number 1993

Class 3
Packing group II

Proper shipping name FLAMMABLE LIQUID, N.O.S. (contains: approx. 85% xylene)

15. REGULATORY INFORMATION

See hazard identification in section 2.
As appropriate, the classification is based on:
- directive 2001/59/EC (results of the experimental studies),
- directives 1999/45/EC, 2001/60/EC, 2006/8/EC (classification based on the concentration of active substance and ingredients),
- directive 2003/82/EC for pesticides (special risks and safety precautions).
The safety data sheet is written according to Regulation (EC) No 1907/2006 of 18 December 2006 (REACH).

16. OTHER INFORMATION

This information only concerns the above mentioned product and does not need to be valid if used with other product(s) or in any process. The information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user’s own responsibility to make sure that the information is appropriate and complete for his special use of this product.

Full text of risk phrase(s) used in this document:
R10: Flammable
R20/21: Harmful by inhalation and in contact with skin
R20/22: Harmful by inhalation and if swallowed
R23/25: Toxic by inhalation and if swallowed
R38: Irritating to skin
R41: Risk of serious damage to eyes
R43: May cause sensitisation by skin contact
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

History:
Date of previous version 2 May 2006 (revision 2.00)
Date of revision 15 May 2007
Revision 3.00

Changes were made in sections nos 2, 3, 5, 12, 14, 15, 16, according to new data and changes in the regulations.